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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/809,907	03/26/2004	Alfred Gotschhofer	66376-342-7	7699

25269 7590 03/27/2006

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EXAMINER

NAGY, MARC I

ART UNIT	PAPER NUMBER
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3748

DATE MAILED: 03/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/809,907	Applicant(s) GOTSCHHOFFER, ALFRED	
	Examiner Marc I. Nagy	Art Unit 3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-42 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 17-27, 30-33 and 35-42 is/are rejected.
- 7) ☒ Claim(s) 28, 29 and 34 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/26/2004</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 03/26/2004 acknowledged. The submission is in compliance with the provisions of 37 CFR 1.97 and 1.98. Accordingly, the information disclosure statement is being considered by the examiner.

Specification

3. The abstract of the disclosure is objected to because "front" is misspelled in the substitute abstract. Correction is required. See MPEP § 608.01(b).
4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
5. The following title is suggested: Gear pump with variable throughput volume.

Allowable Subject Matter

6. Claims 28, 29, and 34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 17-18, 21-26, 36-40 and 42 are rejected under 35 U.S.C. 102(b) as being anticipated by Rohs et al. (U.S. Patent No. 4,740,142). Rohs et al. discloses a gear pump with variable throughput volume, with two meshing gears with external toothing (gears 2 and 3), which are rotatably held in a working chamber of a pump housing (pump casing 1), at least one of the two gears being driven from a drive shaft (pump gear 2 mounted on driven shaft 4) and one of the two gears, being shiftable in the direction of its axis (sliding part 6), wherein a gap-width defined as a distance measured in axial direction between an essentially plane first interior side wall of the working chamber of the pump housing and a first front face of the shiftable gear, is designed so as to be variable (the difference between the front face of the shiftable gear and upper working chamber of pump gear—see Figs. 5 and 6).
9. With respect to claim 18, Rohs et al. discloses the gear pump according to claim 17, as discussed above, wherein a driven gear is shiftable (sliding part 6) in the direction of its axis (see Figs. 5 and 6).
10. With respect to claim 21, Rohs et al. discloses the gear pump according to claim 17, as discussed above, wherein a second plane interior side wall of the working chamber parallel to and opposite of the first interior side wall is furnished with an essentially cylindrical recess concentric with the gear axis and situated in an area of a second front face of the shiftable gear facing away from the first front face, the diameter of said recess being larger than the outer diameter d of the gear, at least in an area of

the shiftable gear (displacement space 8—please note that although not every feature is labeled with a reference numeral they are clearly seen in the figures).

11. With respect to claims 22 and 23, Rohs et al. discloses the gear pump according to claim 21, as discussed above, wherein a sealing plate is placed in an area of the recess, which plate separates the working chamber of the pump housing from a dead space inside the recess and wherein the sealing plate is disk-shaped (flanged disk 7—please note that although not every feature is labeled with a reference numeral they are clearly seen in the figures).

12. With respect to claim 24, Rohs et al. discloses the gear pump according to claim 22, as discussed above, wherein the sealing plate is being fixedly attached to the shiftable gear (see Figs. 5 and 6).

13. With respect to claim 25, Rohs et al. discloses the gear pump according to claim 22, as discussed above, wherein the sealing plate has radial relief grooves on the side facing the second front face of the shiftable gear, which are positioned such that each space between the teeth of the shiftable gear corresponds to at least one relief groove (see Fig. 9—part 15 of the surface of sliding part 6 facing stationary supported pump gear 2 having a contour matching the path of the tooth tips 16 of the axially stationary pump gear; see column 3, lines 23-33).

14. With respect to claim 26, Rohs et al. discloses the gear pump according to claim 25, as discussed above, wherein an outlet groove is located in the second interior side wall of the working chamber opposite the first interior side wall in the meshing area of the gears on the pressure side; i.e., on the side where the sealing plate is located,

which outlet groove is positioned in a way that each relief groove communicates at least once with the outlet groove during each revolution of the sealing plate (see Fig. 9—see column 3, lines 34-53).

15. With respect to claim 36, Rohs et al. discloses the gear pump according to claim 17, as discussed above, wherein the shiftable gear (gear 3) is rigidly mounted on a control shaft (axle journal 5) which rotates in the pump housing and can be shifted in the direction of axis (see Figs. 1 and 2).

16. With respect to claim 37, Rohs et al. discloses the gear pump according to claim 36, as discussed above, wherein the sealing plate (flanged disk 7) is rigidly mounted on the control shaft (see Figs. 1 and 2).

17. With respect to claim 38, Rohs et al. discloses the gear pump according to claim 36, as discussed above, wherein the control shaft is furnished with at least one pressure plunger to effect the axial shift (front end of sliding part 6), which plunger cooperates with a pressure chamber containing a pressure medium (see Figs. 5 and 6).

18. With respect to claim 39, Rohs et al. discloses the gear pump according to claim 38, as discussed above, wherein the pressure medium is identical with the medium to be pumped and the pressure chamber is flow-connected to the pressure side of the gear pump (see column 3, lines 15-22—the mediums are identical by virtue of being connected to where the two pump gears overlap).

19. With respect to claim 40, Rohs et al. discloses the gear pump according to claim 38, as discussed above, wherein the pressure chamber is connected with an external pressure source (see Figs. 5 and 6).

20. With respect to claim 42, Rohs et al. discloses the gear pump according to claim 38, as discussed above, wherein a restoring spring acts on the control shaft (control spring 9) thus counteracting displacement by the pressure plunger.

Claim Rejections - 35 USC § 103

21. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

22. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

23. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rohs et al. (U.S. Patent No. 4,740,142) in view of legal precedent. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized a variable gap-width in the range of $0-d/5$ or $0-d/50$, d being an outer diameter of the shiftable gear, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 200F.2d 454,456, 105 USPQ 233, 235 (CCPA 1955) (see MPEP §2144.05).

24. Claims 27 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rohs et al. (U.S. Patent No. 4,740,142) in view of Cole et al. (U.S. Patent No. 6,244,839). Rohs discloses the gear pump according to claim 22, as discussed above, however fails to show the dead space is flow-connected via a relief passage with a pressure sink and further wherein the relief passage is furnished with a pressure relief valve opening in the direction of the pressure sink. Cole et al. teaches the use of relief passages, in variable displacement gear pumps, leading from dead space (101) to pressure relief valves (servo valves 193) in the direction of the pressure sink (214) (see Fig. 22). It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize passages and valves to relieve pressure in order to prevent pressure build-up that may impair the movement of the rotor.

25. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rohs et al. (U.S. Patent No. 4,740,142) in view of Miller (U.S. Patent No. 3,110,265). Rohs discloses the gear pump according to claim 22, as discussed above, however fails to show the sealing plate has at least one sealing groove in its side wall, which groove extends along an entire circumference. Miller teaches the use of a sealing plate (element 39) with a sealing groove in its side wall, which groove extends along an entire circumference (seal ring 40). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a sealing groove to further prevent any possible leakage.

26. Claims 32, 33 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rohs et al. (U.S. Patent No. 4,740,142) in view of Moore et al. (U.S. Patent No.

2,052,419). In regard to claims 32 and 33, Rohs discloses the gear pump according to claim 17, as discussed above, however fails to show a leakage channel departing from the dead space. Moore teaches the use of a leakage channel in a variable delivery gear pump, wherein the leakage channel (passage 35) departs from the dead space (see Fig. 1) and further wherein the leakage channel is configured as a groove in the pump housing adjacent to the control shaft (end 29 of shaft 26). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a leakage channel departing from the dead space in order to allow any leaked fluid trapped near the control shaft to escape.

27. In regards to claim 35, the modified Rohs et al. discloses the use of an electric motor (i.e. controller 22) to determine the axial position of the shaft (see column 3, line 63 to column 4, line 2). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide an electric motor so as to have a controllable and motorized means to move the shaft.

28. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rohs et al. (U.S. Patent No. 4,740,142) in view of Yue (U.S. Patent No. 4,872,536). In regards to claim 41, Rohs discloses the gear pump according to claim 38, as discussed above, however fails to show the pressure chamber is connected with a clean-oil control device. Yue teaches the use of an oil filter (see Fig. 10) in a hydraulic pump. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a clean-oil control device so as to prevent dirty oil being utilized internally.

Conclusion


29. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Schreiber et al. (U.S. Patent No. 6,283,735) discloses a variable-delivery external gear pump; Baker (U.S. Patent No. 5,724,812) discloses a variable displacement apparatus and method of using the same; Kinney (U.S. Patent No. 5,306,127) discloses a fluid pump with axially adjustable gears.

30. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc I. Nagy whose telephone number is 571-272-2758. The examiner can normally be reached on Monday - Friday 8 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion can be reached on 571-272-4859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Marc I. Nagy


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